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EXAMINER

BELL, WILLIAM P

ART UNIT	PAPER NUMBER
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1791

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ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/549,773	Applicant(s) CICCONE, VINCE	
	Examiner WILLIAM P. BELL	Art Unit 4151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-13, 15-28, 31-37 and 40-43 is/are pending in the application.
4a) Of the above claim(s) 31-37 and 40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-13, 15-28 and 41-43 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 September 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>8/24/2006</u> . | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-13, 15-28, and 41-43, drawn to methods and apparatus for removing mold components from an injection molding machine.

Group II, claim(s) 13, claim(s) 31-37 and 40, drawn to mold support mechanisms.

2. The inventions listed as Groups I and II do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features. The special technical feature of the invention listed as Group I is a method and apparatus for removing a mold from an injection molding machine, whereas the special technical feature of the invention listed as Group II is a mold support member which can be adapted to use on molds of different sizes and molding machines of different configurations. The method and apparatus of the Group I invention do not require the mold support member of the Group II invention, and vice versa. As such, the two inventions are not linked by a common special technical feature and define separate general inventive concepts. Therefore, they do not meet the requirements of unity of invention as defined in PCT Rules 13.1 and 13.2.

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Furthermore, the special technical feature of the Group II invention, mold support members movable between operable and inoperable positions and nested in a mold plate, is known in the art and therefore cannot be a special technical feature under PCT Rule 13.2. Von Holdt (U.S. Patent No. 6,171,094, already of record) teaches mold support members moveable between operable and inoperable position (see Figure 6, where the illustrated position is inoperable for tie bars designated 14a and the support members 44 and 48 would be moved inwardly along slot 50 to an operable position for said tie bars) and nested in a mold plate (see Figures 2 and 3, where support member 48 nests in mold plate 24).

3. During a telephone conversation with James Kozuch on 9 December 2008 a provisional election was made with traverse to prosecute the invention of Group I, claims 1-13, 15-28, and 41-43. Affirmation of this election must be made by applicant in replying to this Office action. Claims 31-37 and 40 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

4. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they do not include the following reference sign(s) mentioned in the description: 250 (see page 14), 13' (see page 28). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should

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include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

5. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(5) because they include the following reference character(s) not mentioned in the description: 14, 110', 120, and 130 (see Figures 10-10D); 174' (see Figure 15); and 241 and 250' (see Figure 16A) . Corrected drawing sheets in compliance with 37 CFR 1.121(d), or amendment to the specification to add the reference character(s) in the description in compliance with 37 CFR 1.121(b) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

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The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Claims 11-12 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Claim 11, and therefore claim 12 which depends on claim 11, recites a core assembly including a master core plate, guide means on the master core plates, a cavity plate, and a cavity insert. It is unclear from this language whether applicant means a core assembly or a cavity assembly and whether the master plate should be a master core plate or a master cavity plate. It appears that Applicant intends to describe the components of a stack mold in which the relative positions of the core and cavity halves of a mold section have been reversed from their conventional positions as described in claim 2. For the purpose of compact prosecution, examination will be conducted on the assumption that this is Applicant's intent.

8. Claims 16-28 and 41-43 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Each of these claims recites an apparatus for removing components of an injection molding machine and lists various components of said injection molding machine. However, the claims do not specify which components are being removed by said apparatus, nor do they provide any structural limitations for the apparatus. Furthermore, the limitation "for removing components of an injection molding machine" is an intended use and therefore carries no patentable weight, resulting in claim that essentially reads as an apparatus. While it is clear that this is not what Applicant intends, it is unclear exactly what is intended and clarification is required.

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For the purpose of compact prosecution, examination will be conducted on the assumption that each of these claims should read as an apparatus configured to remove the listed mold components.

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 16-28 and 41-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Martin (U.S. Patent No. 5,350,289, hereinafter referred to as the '289 patent). In each of these claims, Applicant recites an apparatus for removing mold components of an injection molding machine and then recites specifics of a mold assembly and method of removing said mold assembly. Applicant does not recite any limitation of the apparatus itself, but based on the assumption laid out in paragraph 7 above, it is assumed that the apparatus is configured to remove the listed mold assemblies. Martin teaches a mold balancing lift bar (see bar 115 in Figure 3) which, in combination with a standard chain hoist, is capable of removing a modular mold assembly (see column 4, lines 30-37), including each of those recited in these claims.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

12. Claims 1, 3, 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '289 patent in view of Rosato (Rosato, D.V., D.V. Rosato, and M.G. Rosato, *Injection Molding Handbook (3rd Edition)*, Springer-Verlag, 2000, pages 305-306 and 371-373). Regarding claim 1, the '289 patent teaches an injection machine comprising the following components: a core assembly (see ejector mold half 23, ejector plate 25, clamp plate 29, ear plate 83, and adapter plate 43 in Figure 1, which together make up the core assembly of the mold) including a master core plate (see adapter plate 43 in Figure 1), a core plate (see ejector mold half 23 in Figure 1) releasably secured to said master core plate (see clamps 153 on adapter plate 43 in Figure 1 and column 5, lines 58-61, wherein the clamps are moved out of the way of the ear plate 83 when removing the mold components, said ear plate having been attached to the ejector mold half 23 and clamp plate 29 as described at column 3, lines 63-67, thereby securing the ejector mold half to the adapter plate), said master core plate including guide means (see guide rails 53 and rollers 67 in Figure 1) for guiding said core plate relative to said master core plate (see column 3, lines 24-40); a cavity assembly (see cavity mold half 21, ear plate 81, and adapter plate 41 in Figure 1, which together make up the cavity assembly of the mold) comprising a manifold plate (see adapter plate 41 in Figure 1), a first cavity plate (see cavity mold half 21 in Figure 1) releasably secured to the manifold plate (see clamps 153 on adapter plate 41 in Figure 1 and column 5, lines 58-61), said first cavity plate oriented in the opposing direction to

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the core plate (see orientation of adapter plates 41 and 43 in Figure 1), said cavity assembly moveable relative to the core assembly (see column 3, lines 13-15, wherein the adapter plates 41 and 43 are attached to the platens of the molding machine; it is well known to one of skill in the art that the platens of a molding machine move relative to each other in operation). The '289 patent does not explicitly teach a core insert and a cavity insert as components of the mold assembly. However, the use of core and cavity inserts in the construction of an injection mold is very well known in the art. For example, Rosato teaches the use of core and cavity inserts (see page 305 under the heading *Inserts*) which together form a cavity in the shape of the desired article, into which molten plastic may be injected. It would have been obvious to one of ordinary skill in the art to have modified the molding machine components taught by the '289 patent with a core and cavity insert as taught by Rosato for the benefit of ease of machining (see Rosato, page 305, paragraph 1 under the heading *Inserts*). Hereinafter the mold assembly of claim 1, as described above, will be referred to hereinafter as a "modular conventional mold assembly".

The '289 patent further teaches a method of removing components of an injection mold machine (see column 5, lines 51-52) comprising a modular conventional mold assembly, said method comprising the steps of (a) moving the core assembly and cavity assembly into a closed position whereat the cavity insert and core insert are mated together (see Figure 3, wherein the mold halves have been mated together and the core and cavity in the mold halves form the shape of the desired article); (b) securing said core plate to said cavity plate, thereby forming a mold module (see column 5, lines 55-

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56, wherein mold lifting bar 115 in Figure 3 connects lifting buttons 25 in Figure 1 and thereby secures the core and cavity portions of the mold assembly to each other; in addition, it would be obvious to one of ordinary skill in the art to secure the mold halves together prior to their removal from a molding machine to prevent damage to the mold components from any inadvertent movement); (c) releasing the securing means which secures the cavity plate to the manifold plate (see column 5, lines 58-61); (d) opening the mold from the closed position, until the first cavity plate disengages the manifold plate and all connections thereto (it would be obvious to one of ordinary skill in the art that the mold must not be in the fully closed position when the mold assembly is removed, since any clamp force applied to the mold halves would interfere with said removal; the common practice is to jog the mold open slightly so that clamp forces are removed and any binding between the mold components is relieved); (e) releasing the securing means which secures the core plate to the master core plate (see column 5, lines 58-61); (f) lifting said mold module in a direction perpendicular to the direction of motion between said open and closed position (see column 5, lines 62-63), said module being guided in said perpendicular direction by said guide means (see column 5, lines 2-10, wherein the function of the guide means is given for insertion of a mold module; it would be obvious to one of skill in the art that said means would similarly function to guide the mold module upon removal of a mold module).

Regarding claim 3, the '289 patent teaches a method wherein said guide means comprises a set of roller guides secured to the master core plate and rollingly engaging said first core plate (see roller guides 67 in Figure 1), said guide means following a

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guide path perpendicular to the motion of the mold machine, facilitation removal of said mold module from said mold machine (see column 5, lines 2-10, wherein the function of the guide means is given for insertion of a mold module; it would be obvious to one of skill in the art that said means would similarly function to guide the mold module upon removal of a mold module).

Regarding claim 7, the '289 patent teaches a method comprising the further step of attaching hoisting means to each said mold module after said step (d) and prior to said step (e) (see column 5, lines 55-58, wherein lifting bar 115 and ring 117 serve as hoisting means; the order of performing the various steps would be obvious variations given that adapter plates 41 and 43 comprise guide rails for preventing the mold module from falling before and after clamps 153 are removed).

Regarding claim 10, Rosato teaches that both releasable straps and clamp bars are used interchangeably to secure mold halves together in quick mold change systems (see page 373, paragraph 2). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have modified the method taught by the '289 patent with the recited combination of straps and bars for the benefit of protecting the mold components while they are being moved and stored.

13. Claims 4 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the '289 patent and Rosato as applied to the claims above, and further in view of Martin (U.S. Patent 5,562,935, hereinafter the '935 patent). Regarding claim 4, the '289 patent teaches a method wherein the roller guides guide the core plate along a vertically contoured slot in the master core plate (see column 3, lines 35-43),

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but does not teach a method wherein the contoured slot causes disengagement of quick disconnect couplings between plates and then moves the core plate slightly away from the master core plate to facilitate removal of the mold module. In an extension of the '289 patent, and hence in analogous art, the '935 patent teaches a mold assembly wherein water conduits (see conduits 325 in Figure 7) and connector plates (see plates 306, 307, 308, and 309 in Figure 7) are provided, as well as quick disconnects (see disconnects 310 and 311 in Figures 7, 10, and 11) which are automatically connected and disconnected when the mold module is inserted and removed, respectively, from the adapter plates 304 and 305 (see column 8, lines 16-19). Since the disconnects 310 and 311 are configured in a vertical direction (see Figure 7), it would be obvious to one of skill in the art that lifting the mold assembly in the vertical direction, guided by the roller guides, would result in disengagement of the quick disconnect couplings. Both the '289 patent and the '935 patent further teach that the upper edge of the adapter plates and the guide rails are relieved approximately 5° to facilitate entry and exit of the mold assembly from the mold base (see column 3, lines 44-50 of the '289 patent and column 5, lines 1-6 of the '935 patent). This relief feature then enables the mold assembly to move slightly away from the adapter plates during removal. Thus, it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the method of the '289 patent, as modified by Rosato, with the quick disconnects taught by the '985 patent for the benefit of simplifying the mold removal process and ensuring proper connections upon mold installation (see column 8, lines 28-32).

Regarding claim 8, the '985 patent teaches a mold machine which defines coolant conduits extending between at least two adjacent plates (see Figures 7 and 10, wherein coolant conduits 325 connect to conduits 324 in plate 323, which is part of adapter plate 304, and then connect to conduits in plate 306, which is part of ear plate 330), said conduits being selectively disengageable and reengageable by quick disconnect couplings (see disconnects 310 and 311 in Figures 7 and 10) during module removal and reattachment respectively (see column 8, lines 16-19).

14. Claims 2 and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over the '289 patent in view of Rosato and Travaglini (U.S. Patent No. 5,731,014). The '289 patent teaches a method of removing components of a conventional injection mold machine, said machine comprising a modular conventional mold assembly, said method comprising the steps of (a) moving the core assembly and cavity assembly into a closed position whereat the cavity insert and core insert are mated together (see Figure 3, wherein the mold halves have been mated together and the core and cavity in the mold halves form the shape of the desired article); (b) securing said core plate to said cavity plate, thereby forming a mold module (see column 5, lines 55-56, wherein mold lifting bar 115 in Figure 3 connects lifting buttons 25 in Figure 1 and thereby secures the core and cavity portions of the mold assembly to each other; in addition, it would be obvious to one of ordinary skill in the art to secure the mold halves together prior to their removal from a molding machine to prevent damage to the mold components from any inadvertent movement); (c) releasing the securing means which secures the cavity plate to the manifold plate (see column 5, lines 58-61); (d) opening the mold from the closed

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position, until the first cavity plate disengages the manifold plate and all connections thereto (it would be obvious to one of ordinary skill in the art that the mold must not be in the fully closed position when the mold assembly is removed, since any clamp force applied to the mold halves would interfere with said removal; the common practice is to jog the mold open slightly so that clamp forces are removed and any binding between the mold components is relieved); (e) releasing the securing means which secures the core plate to the master core plate (see column 5, lines 58-61); (f) lifting said mold module in a direction perpendicular to the direction of motion between said open and closed position (see column 5, lines 62-63), said module being guided in said perpendicular direction by said guide means (see column 5, lines 2-10, wherein the function of the guide means is given for insertion of a mold module; it would be obvious to one of skill in the art that said means would similarly function to guide the mold module upon removal of a mold module). The '289 patent teaches that such a mold configuration and installation/removal method has the advantage of enabling rapid changes in mold components (see column 2, lines 27-29).

In the analogous art of modular injection molds, Travaglini teaches a stack molding machine, said machine comprising a stationary core assembly (see column 8, lines 57-61 and Figure 7, wherein the incompletely illustrated mirror images of core part 52 and mold base 104 are mounted on the stationary platen) and an opposing facing moving core assembly (see column 8, lines 57-61 and core part 52 and mold base 104 in Figure 7), each core assembly including a master core plate (see mold base 104 in Figure 7) and a core plate (see core part 52 in Figure 7) releasably secured to the

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master core plate (see column 8, lines 58-59, wherein the core plate 52 is mounted to mold base 104 and can therefore inherently be unmounted from said mold base); an intermediate cavity assembly (see cavity part 53 and intermediate member 110 in Figure 7, and their incompletely illustrated mirror images) comprising two central manifold plates secured to each other (see intermediate members 110 in Figure 7) and a pair of cavity plates releasably secured on either side of said manifold plates (see cavity parts 53 in Figure 7); said cavity assembly and moving core assembly moveable by moving mold press means in such a manner that the core plates and cavity plates are separated by equal amounts on either side of the cavity assembly (see Figure 2 and column 2, lines 58-60, wherein the opening operation of a conventional stack mold is disclosed), and may be mated together simultaneously, the cavity and core plates defining a cavity therebetween each (see column 2, lines 56-68 and the cavity formed in Figure 7 by the closed mold sections), into which molten plastic may be injected from a molten plastic source (see column 2, lines 61-67), said cavities forming the shape of a desired article (one of skill in the art knows that this is true for all injection molds). Travaglini does not explicitly teach the use of core and cavity inserts in said mold, although they are diagrammed in a representation of a typical two level stack mold in Figure 2b. However, the use of core and cavity inserts in the construction of an injection mold is very well known in the art. For example, Rosato teaches the use of core and cavity inserts (see page 305 under the heading *Inserts*) which together form a cavity in the shape of the desired article, into which molten plastic may be injected. It would have been obvious to one of ordinary skill in the art to have modified the molding

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machine components taught by the '289 patent with a core and cavity insert as taught by Rosato for the benefit of ease of machining (see Rosato, page 305, paragraph 1 under the heading *Inserts*). Hereinafter the mold assembly of claim 2, as described above, will be referred to hereinafter as a "modular stack mold assembly". The modular stack mold assembly taught by Travaglini is designed specifically so that it can be removed from an injection molding machine without removing the mold bases 104 and the intermediate plates 110 (see column 8, lines 37-48, especially lines 46-48). Each of the mold assemblies 50 shown in Figure 7 of Travaglini corresponds directly to a mold module taught by the '289 patent. Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the mold plate arrangement and removal method taught by the '289 patent and the modular stack mold assembly taught by Travaglini for the benefit of efficiently exchanging mold assemblies in a stack injection molding operation. While neither the '289 patent nor Travaglini teach hoisting both mold modules simultaneously, it would have been obvious to one of ordinary skill in the art at the time of the invention to do so because it would result in less downtime on the molding machine than removing the mold assemblies individually.

Regarding claim 9, the '289 patent teaches a method wherein mating locating keys are positioned to located said modules for reattachment upon said mold machine (see column 4, lines 46-49 and the edges of ear plates 81 and 83 at location 119 in Figure 3; the step machined into the ear plates at 119 functions in combination with guide rollers 67 and guide rails 49 as a key for locating the modular mold assembly in the mold base and mating the two sections together; see column 4, lines 55-60).

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15. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over the '289 patent in view of Rosato, Rozema (U.S. Patent No. 5,846, 472), and Travaglini.

Regarding claim 11, the '289 patent teaches a method of removing components of a conventional injection mold machine, said machine comprising a modular conventional mold assembly, said method comprising the steps of (a) moving the core assembly and cavity assembly into a closed position whereat the cavity insert and core insert are mated together (see Figure 3, wherein the mold halves have been mated together and the core and cavity in the mold halves form the shape of the desired article); (b) securing said core plate to said cavity plate, thereby forming a mold module (see column 5, lines 55-56, wherein mold lifting bar 115 in Figure 3 connects lifting buttons 25 in Figure 1 and thereby secures the core and cavity portions of the mold assembly to each other; in addition, it would be obvious to one of ordinary skill in the art to secure the mold halves together prior to their removal from a molding machine to prevent damage to the mold components from any inadvertent movement); (c) releasing the securing means which secures the cavity plate to the manifold plate (see column 5, lines 58-61); (d) opening the mold from the closed position, until the first cavity plate disengages the manifold plate and all connections thereto (it would be obvious to one of ordinary skill in the art that the mold must not be in the fully closed position when the mold assembly is removed, since any clamp force applied to the mold halves would interfere with said removal; the common practice is to jog the mold open slightly so that clamp forces are removed and any binding between the mold components is relieved); (e) releasing the securing means which secures the core plate to the master core plate

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(see column 5, lines 58-61); (f) lifting said mold module in a direction perpendicular to the direction of motion between said open and closed position (see column 5, lines 62-63), said module being guided in said perpendicular direction by said guide means (see column 5, lines 2-10, wherein the function of the guide means is given for insertion of a mold module; it would be obvious to one of skill in the art that said means would similarly function to guide the mold module upon removal of a mold module). The '289 patent teaches that such a mold configuration and installation/removal method has the advantage of enabling rapid changes in mold components (see column 2, lines 27-29).

In the analogous art of injection molding, Rozema teaches a three level stack injection molding machine, said machine comprising a core assembly including a master core plate (see the plate in Figure 1 containing melt runner system components 32, 44, and 72 located to the left of first level 12) and a cavity plate (see cavities 40 and the plate immediately to the left of said cavities in first level 12 in Figure 1); an intermediate assembly comprising manifold plates (see the two plates in Figure 1 which contain center manifold 18 and runner system components 30 and 50) and a first core plate (see the cores which mate with cavities 40 in first level 12 in Figure 1, plus the plate to the right of said cores), said first core plate oriented in the opposing direction to the cavity plate (see the orientation depicted in Figure 1 of said components), said intermediate assembly moveable relative to the core assembly (see column 2, lines 10-13, wherein the three levels are separable) such that the cavity plate and core plate may be selectively mated together to define a cavity therebetween into which molten plastic may be injected from a molten plastic source, said cavity forming a shape of a

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desired article (one of skill in the art knows that this is true for all injection molds).

Rozema does not explicitly teach the use of core and cavity inserts in said mold, although they are diagrammed in a representation of a typical two level stack mold in Figure 2b. However, the use of core and cavity inserts in the construction of an injection mold is very well known in the art. For example, Rosato teaches the use of core and cavity inserts (see page 305 under the heading *Inserts*) which together form a cavity in the shape of the desired article, into which molten plastic may be injected. It would have been obvious to one of ordinary skill in the art to have modified the molding machine components taught by the '289 patent with a core and cavity insert as taught by Rosato for the benefit of ease of machining (see Rosato, page 305, paragraph 1 under the heading *Inserts*). Rozema does not explicitly teach that the three mold levels are configured to be releasably connected to the mold bases and intermediate plates such that they can be removed as modules. As has been shown above, Travaglini teaches that such a configuration in stack molds has the advantage of enabling removal of part-specific mold components without requiring removal of complicated runner and cooling systems (see column 8, lines 37-48). Therefore, it would have been obvious to one of ordinary skill in the art to have combined the mold removal configuration and method taught by the '289 patent, the modular stack mold configuration taught by Travaglini and the first level stack mold configuration taught by Rozema for the benefit of providing rapid mode changes in three level stack molds.

16. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Showers (U.S. Patent No. 1,928,213) in view of Skubic (U.S. Patent No. 3,028,186). Showers

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teaches a hoist bar (see page 1, line 89) comprising a main bar having an upper side and a lower side (see channel beam 1 in Figure 1) and a pair of blocks secured to the lower side of said bar at opposite ends thereof (see carriages 8a and 8b in Figure 1), said bar having at least one hoist member secured to the upper side of the bar (see lifting eye 6 in Figure 1), said hoist member adapted for lifting said bar (see page 1, lines 95-97). In the analogous art of lifting devices, Skubic teaches a hoist bar (see column 1, line 3) comprising a block having an opening (see block 40 in Figure 1) having an opening, a guide pin (see member 30 in Figure 1) extending through the opening in the block (see Figure 2, wherein member 30 passes through an opening in block 40), said guide pin having mounting blocks at each end of the guide pin (see members 31 and 32 in Figure 2) which limit the sliding movement of the guide pin (as shown in Figure 1, member 30 cannot slide through block 40 past members 31 and 32). The particular arrangement taught by Skubic has the advantage of being able to slide the load relative to the hoist attachment point in order to move the load and keep it balanced (see column 1, lines 17-22). It would have been obvious to one of ordinary skill in the art at the time of the invention to have combined the basic double mount hoist bar taught by Showers with the sliding mounting mechanism taught by Skubic for the benefit of lifting two separate objects, each of which are independently slidable and can therefore be independently balanced. While neither Showers nor Skubic teach adapting each mounting block to mount a mold plate, it would have been obvious to one of ordinary skill in the art at the time of the invention to use an eye bolt or other mounting mechanism, since it has been held that the configuration was a matter of

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choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration claimed was significant. *In re Dailey*, 357 F.2d 669, 149 USPQ 47 (CCPA 1966).

17. Claims 5 and 6 are rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the '289 patent, Rosato, and Travaglini as applied to claim 2 above, and further in view of Showers. Regarding claim 5, none of the '289 patent, Rosato, and Travaglini teach a method comprising the step of applying a hoist attachment simultaneously to each mold module. In the art of lifting devices, Showers teaches a simple hoist attachment comprising two attachments points, each of which is slidable. One of skill in the art knows that mold components are commonly removed from an injection molding machine by use of a ceiling-mounted hoist mechanism which can lift, to remove the mold from the open machine area, and/or traverse, to allow for separation of the mold from the platens. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used a hoist such as taught by Showers in the method taught by the '289 patent, as modified, since the hoist taught by Showers and the commonly used ceiling-mounted hoist perform the same function and the hoist taught by Showers would allow greater control over traversing moving of the mold.

Regarding claim 6, the '289 patent, Rosato, and Travaglini do not teach a hoist attachment further comprising stops at the ends thereof. Showers teaches the use of such stops (see transverse plates 32 in Figure 1). It would have been obvious to one of ordinary skill in the art to have used stops as taught by Showers for the benefit of preventing accidental dropping of the mold components.

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18. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the '289 patent, Rosato, Travaglini, and Rozema as applied to claim 11 above, and further in view of Showers. Regarding claim 5, none of the '289 patent, Rosato, Travaglini, and Rozema teach a method comprising the step of applying a hoist attachment simultaneously to each mold module. In the art of lifting devices, Showers teaches a simple hoist attachment comprising two attachments points, each of which is slidable. One of skill in the art knows that mold components are commonly removed from an injection molding machine by use of a ceiling-mounted hoist mechanism which can lift, to remove the mold from the open machine area, and/or traverse, to allow for separation of the mold from the platens. It would have been obvious to one of ordinary skill in the art at the time of the invention to have used a hoist such as taught by Showers in the method taught by the '289 patent, as modified, since the hoist taught by Showers and the commonly used ceiling-mounted hoist perform the same function and the hoist taught by Showers would allow greater control over traversing moving of the mold.

19. Claim 15 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of the '289 patent, Rosato, and Travaglini as applied to claim 2 above, and further in view of Von Holdt. None of the '289 patent, Rosato, and Travaglini teach the recited mold support apparatus. In the analogous art of injection molding machines, Von Holdt teaches a mold support apparatus (see outrigger supports 44 in Figure 1) comprising mold support pieces interconnecting the mold plates to a molding machine (see outriggers 46 in Figure 1, wherein the outriggers connect center plate 41 of the

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mold to the machine via tie bars 14), each said support piece engaged to one said plate and the tie bars or guide ways of said machine (see outriggers 46 in Figure 1, wherein the outriggers connect center plate 41 of the mold to the machine via tie bars 14), each support piece positionable between an inoperable position (see Figure 6, wherein the illustrated position is inoperable for tie bars designated 14a) and an operable position wherein each interconnects said plate to said tie bars or guide ways (see Figure 6, wherein the support members 44 and 48 would be moved inwardly along slot 50 to an operable position for said tie bars), wherein said support piece nests within said mold plate (see Figures 2 and 3, where support member 48 nests in mold plate 24).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to WILLIAM P. BELL whose telephone number is (571)270-7067. The examiner can normally be reached on Monday - Thursday, 8:00 am - 5:30 pm; Alternating Fridays, 8:00 am - 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz can be reached on 571-272-1206. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Wpb

/Richard Crispino/
Supervisory Patent Examiner, Art Unit 1791